



## STATE OF NEVADA – DEPARTMENT OF PERSONNEL

### CLASS SPECIFICATION

<u>TITLE</u>	<u>GRADE</u>	<u>EEO-4</u>	<u>CODE</u>
IT PROFESSIONAL IV	41	B	7.921
IT PROFESSIONAL III	39	B	7.925
IT PROFESSIONAL II	37	B	7.926
IT PROFESSIONAL I	34	B	7.929
IT PROFESSIONAL TRAINEE	31	B	7.951

### SERIES CONCEPT

Information Technology (IT) Professionals analyze, develop, implement, maintain, and modify computer operations, systems, networks, databases, applications, and/or information security. Incumbents may perform duties in one or more IT specialization areas depending on the needs of the agency.

Conduct detailed alternative analyses and determine end-user requirements through consultation with end-users, technicians, vendors, management, and others.

Maintain documentation related to the assigned IT specialization's architecture, operations, and other records of work activities as required.

Maintain current knowledge of technological trends and advancements in the IT field as well as security management practices, laws, policies, and ethics.

Participate in recommending and justifying resource allocations and expenditure decisions, tracking and recording expenditures, preparing purchase requests, and writing technical requirements for grant proposals.

Perform related duties as assigned.

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### SPECIALTY AREAS

Positions in this series focus on one of the specialty areas indicated below, perform a combination of duties in two or more areas, or function as generalists. The descriptions illustrate the nature of work commonly performed in an IT environment, but are not intended to be comprehensive. As technology evolves, other areas of specialization may emerge.

**Computer Operations:** direct help desk support and mainframe and server operations in order to ensure that all user files and reports are created, processed, and available in a timely manner and systems are maintained and monitored. Incumbents establish goals and objectives, arrange for emergency coverage, schedule staff rotations, and coordinate planned shutdowns of the system, system maintenance, and application software upgrades.

**Systems Administration:** select, analyze, maintain, and modify computer, communications, mainframe, and server hardware, operating systems, and auxiliary software packages required to support various information systems and back-up and recover the agency's software and data. Incumbents install and test new system components, troubleshoot hardware and software problems, and modify and enhance systems to improve performance. Incumbents improve file organization, solve job control language or systems programming language problems, analyze program failures, and develop or suggest utility program uses.

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## SPECIALTY AREAS (cont'd)

### ***Systems Administration:*** (cont'd)

Incumbents provide technical assistance and training to system users that require them to analyze computer output and programs, code, research programming manuals, and solicit vendors and other professional staff for technical information.

***Network Administration:*** plan, design, develop, and verify the physical deployment of an integrated geographically dispersed information processing network. Incumbents administer networks comprised of multiple platforms, information resources, large grade applications, communications protocols, and physical network topologies.

***Database Administration:*** model agency data, configure databases, tune performance, and back-up and recover data. Incumbents develop and implement standards and procedures to convert, transfer, and interface data within and between databases; maintain data dictionaries, repositories, and related software; control the authorized sharing of information with multiple users within and/or outside the organization; and provide technical consultation regarding application development and utility executions within various database environments.

***Applications Analysis and Development:*** analyze, develop (design, program, and construct), implement, maintain, and modify various platforms of information systems. Incumbents are required to define and implement a solution to a given problem that requires an individually tailored response for end-user requirements. Incumbents must have the ability to program in a general purpose programming language, develop written requirements for proposed applications, develop and present applications training materials to users, and possess knowledge of the necessary interfaces to the computer operating system.

***Information Security:*** administer security policies, security operations, and/or maintain oversight of information systems and data within the assigned area of information security responsibility. Incumbents work with management and technical staff to develop a comprehensive information security program for integrated IT systems within the State or agency and are responsible for three or more of the following ten security domain areas:

- Access control – centralized / decentralized / remote / federated
- Application/system development security – validation / verification / guidelines
- Continuity of operations/disaster recovery planning – business recovery
- Cryptography – transport / storage / authentication / non-repudiation
- Information security management – awareness / policies / risk management / procedural standards
- Operational security (OPSEC) – threats / hostile code / techniques
- Physical technical security – access systems / structural / environmental controls
- Security architecture and models – methods / security operational standards
- Security law, investigation and ethics – cyber crime / incident response / security regulation
- Telecommunications/network security – enclave / monitoring / virtual private network / firewall / prevention

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## CLASS CONCEPTS

**IT Professional IV:** Under administrative direction, incumbents perform supervisory duties and manage projects of varying size, scope, and impact to agency operations to include serving as the project leader; planning, organizing, and directing project activities; resolving design conflicts; data administration; resource allocation; contract negotiation; timeline development; critical path tracking; justifying the need for additional resources; and coordination with other work units within and outside the organization as assigned. Non-supervisory positions must spend the preponderance of their time performing the most advanced professional work in project management and oversight or technology planning and consultation. Subordinates may include Master IT Professionals. Positions in the Information Security function are at the advanced journey level and may also perform supervisory duties.

**Systems Administration:** Incumbents perform the technical and professional work associated with the analysis, enhancement, maintenance, and installation of major information systems including different platforms of mainframes or servers, and participate in strategic planning for future information systems activity. Incumbents typically work with multiple complex information systems and have departmental and external scope. In addition, incumbents train, supervise, and evaluate the performance of IT professionals and support staff.

Typical tasks include serving as a principal technical resource person for a department's strategic information systems planning group and as a liaison to vendor technical personnel; evaluating and making technical recommendations regarding equipment configurations and associated software; performing system design work in situations of unusual difficulty or in the presence of critical or conflicting requirements; coordinating with other agencies and departments concerning technical issues; and designing monitoring techniques and/or equipment to assess system and application operation and performance.

**Network Administration:** Incumbents typically have responsibility for server deployment and agency architecture and participate in the fiscal decision making process and may have primary responsibility for decisions made. Incumbents spend the majority of their time on network design/architecture and less time on troubleshooting and maintenance than lower levels in the same IT specialization; typically have administrative control of routers; and serve as project managers and regularly interact with vendors. Failure typically has agency-wide effects. In addition, incumbents train, supervise, and evaluate the performance of IT professionals and support staff.

Typical tasks include diagnosing and optimizing distributed applications interconnectivity issues; designing agency network architecture; placing, testing, and verifying distributed applications interconnectivity; integrating directory services; configuring distributed authentication; supporting multiple platforms; configuring firewalls; designing, configuring, and installing virtual private networks; comparing departmental security policies to State policies; writing security compliance and exception reports; and analyzing authentication logs.

**Database Administration:** Incumbents plan, direct, design and coordinate multiple agency databases; establish agency database policies and procedures that are compliant with Statewide policy and procedures; determine information needs to include planning, analyzing, modeling, documenting and designing statewide database systems; enforce established standards and procedures; ensure that databases are available to authorized persons; and participate in State IT activities and policy-making activities and/or serve on various committees and work groups. In addition, incumbents train, supervise, and evaluate the performance of IT professionals and support staff.

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## CLASS CONCEPTS (cont'd)

### IT Professional IV (cont'd)

**Applications Analysis and Development:** Incumbents perform the most advanced professional work to solve current and anticipated user problems using the capabilities of an information system; review present and prospective software and/or hardware methodologies in order to keep agency practices current with advancing technology; analyze and resolve implementation design issues in situations of unusual difficulty or in the presence of critical or conflicting requirements; translate user or project requirements characterized by conflicting or critical design parameters into a computer based solution; act as an acknowledged authority on a broad range of developmental and implementation issues and serve as the primary technical resource for lower level personnel; and discover general solution approaches to entire classes of related problems. In addition, incumbents train, supervise, and evaluate the performance of a staff of IT professionals and support staff.

Typical tasks include serving as a liaison to IT personnel, vendors, outside users, and others; coordinating with other agencies and departments concerning technical issues; developing and documenting appropriate standards and criteria for acceptable programming, documentation, and systems development life cycle practice; maintaining technical currency in coding techniques; programming proof of concept and implementable applications as assigned; developing, implementing, coding, testing, and documenting a program written in a general purpose programming language.

**Information Security:** Under general direction, incumbents perform advanced journey level duties and are responsible for directing and managing the division/unit information security program with direct authority for the design, establishment, administration, and execution of a portion of the division/unit information security program which typically has Statewide effects. Incumbents may train, supervise, and evaluate the performance of subordinate staff as assigned.

Incumbents perform all or some of the duties described in the series concept at the division/unit level with at least 70% of their daily activities devoted solely to information security. Incumbents interact with internal and external peers and higher supervisory levels in order to answer questions requiring explanation or interpretation of information security standard procedures, identify complex information security risks, vulnerabilities and problems; select the best course of mitigation actions for security issues; and solve security problems involving some conflict and requiring interpretation/application of policy.

**IT Professional III:** Under general direction, incumbents perform advanced journey level duties and may train, supervise, and evaluate the performance of subordinate staff and/or serve as a project leader as assigned. Incumbents may function as a unit leader to include directing the activities of a branch IT support unit, overseeing projects of limited scope, and coordinating activities with other work groups. This is a supervisory level for Computer Operations and the journey level for Information Security positions.

**Computer Operations:** Under general direction, incumbents supervise IT Technician Trainees, I's, II's, III's, IV's and subordinate supervisors, in a large computer operations center. Incumbents may be required to supervise IT Technician V's and/or VI's. The operations center (full function data center) has a complex environment and does not depend on any other systems to complete tasks.

**Systems Administration:** Incumbents perform advanced professional work associated with the analysis, enhancement, maintenance, and installation of application-independent hardware and/or software components of one or more information systems including mainframes or servers. Incumbents typically work with systems that are large and complex, involve multi-user and multi-tasking capabilities, and have

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## CLASS CONCEPTS (cont'd)

### IT Professional III (cont'd)

#### **Systems Administration:** (cont'd)

departmental scope. Problems encountered are diverse and occasionally unprecedented so that unique solutions must be researched and implemented. Typical tasks include evaluating and making technical recommendations regarding equipment configurations and associated software; serving as a liaison to vendor technical personnel; coordinating with other agencies and departments concerning technical issues; and designing and implementing monitoring techniques and/or equipment to assess system and application operation and performance.

**Network Administration:** Incumbents verify and validate purchase costs and fulfillment of requirements; may integrate servers into a geographically dispersed network; and may have administrative control of routers. Failure could have agency-wide effects.

Typical tasks include configuring virtual local area networks (LANs), verifying interconnectivity of distributed applications, configuring data storage networks, deciding correct and optimal devices to solve service or configuration issues, reporting network capacity and statistics, and designing directory services in a large geographically dispersed network.

**Database Administration:** Incumbents perform the full range of duties described in the series concept, function independently, exercise administrative control in defining database architecture at an advanced level, and are typically located in large State agencies and are responsible for managing multiple statewide databases. Incumbents work independently as the agency's database administrator.

**Applications Analysis and Development:** Incumbents perform advanced professional work in the analysis of user requirements and development and implementation of computer based solutions; review available hardware and/or software tools to choose implementation platform; perform advanced level analytical and technical work where user or project requirements are of considerable complexity; determine project objectives by analyzing user needs and developing an overall logical model and sequencing of the tasks to be implemented; require detailed knowledge of the user's subject matter; and develop a detailed plan for problem segmentation, inter-module linkage, and implement individual components.

Typical tasks include providing mid-level consultation and/or training for IT personnel and systems users; coordinating with other agencies and departments concerning technical issues; following agency test and validation procedures and suggest improvements; maintaining technical currency in coding techniques; programming prototype and implementable applications as assigned; and developing, implementing, coding, testing, and documenting multiple program segments written in a general purpose programming language.

Incumbents' work potentially involves errors that disable or delay the project in question, causing inconvenience to others and costly repairs; are assigned projects having broad scope and are responsible for successful operation of the project; carry full responsibility for information systems projects of significant size and scope and are expected to resolve design conflicts and perform comparative analysis on the costs/benefits of various implementation alternatives; and work directly affects numerous users and agency programs.

**Information Security:** Under limited supervision, incumbents perform journey level duties and implement program/project information security tasks with responsibility for the design, establishment, administration, and execution of the assigned portion of the department/division/unit information security program; and for the planning and implementation of information security initiatives at the functional,

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## CLASS CONCEPTS (cont'd)

### IT Professional III (cont'd)

#### **Information Security:** (cont'd)

project or program level. Incumbents perform some or all of the duties described in the series concept at a program/project level with at least 70% of their daily activities devoted solely to information security. Incumbents interact with internal and external peers and supervisory levels in order to answer questions requiring explanations or interpretations of information security standard procedures and to solve security problems involving some conflict and requiring interpretation/application of policy.

**IT Professional II:** Under general supervision, incumbents perform journey level duties and may serve as a lead worker to lower level IT staff as assigned. This is a supervisory level for the Computer Operations function.

**Computer Operations:** Under limited supervision, incumbents supervise a shift of IT Technician Trainees, I's, II's, III's, IV's and subordinate supervisors in a large computer operations center, or multiple shifts in a smaller environment. Incumbents may be required to supervise IT Technician V's and/or VI's.

**Systems Administration:** Incumbents perform professional work in the analysis, enhancement, maintenance, and installation of application-independent hardware and/or software components of one or more information systems including mainframes or servers. Incumbents typically work with systems that involve multi-user and multi-tasking capabilities. Problems encountered tend to be of a recurring kind and solutions are derived through application of standard professional practices and procedures.

Typical tasks include making technical recommendations regarding equipment configurations and associated software and communicate with vendor technical support; performing general system upkeep such as installing vendor supplied changes, backing up and restoring systems and files, monitoring directory services, logging changes, and updating documentation; and implementing monitoring techniques and/or equipment to assess system operation and performance.

**Network Administration:** Incumbents may configure and deploy servers, may provide technical training and guidance to other networking staff members, and may be asked to obtain quotes and vendor names and provide resource allocation recommendations. Failure is mitigated by limited scope of influence.

Typical tasks include designing directory services, choosing distributed services methodologies, administering data storage networks, configuring primary and secondary authentication, monitoring device capacity, providing basic troubleshooting of network devices using limited administrative access, and implementing limited transport and server security policies.

Incumbents may install workstations or troubleshoot and repair hardware and software problems, however, the focus of positions in this specialty is to plan, design, develop, and verify the logical design and administer the physical deployment of an integrated geographically dispersed information processing network.

**Database Administration:** Incumbents monitor and maintain the database; install software utilities, tools, and programming languages; and resolve problems in the database caused by application design or processing in a database management environment.

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## CLASS CONCEPTS (cont'd)

### IT Professional II (cont'd)

**Applications Analysis and Development:** Incumbents perform professional and technical work in the analysis of user requirements and development and implementation of computer based solutions; review available hardware and/or software tools in order to make appropriate recommendations; perform technical work that involves identifying user requirements, coding, development, and implementation of computer based solutions, problem analysis and implementation of a solution in situations of moderate difficulty; analytical and technical work where user or project requirements are of moderate complexity; develop a detailed plan for problem segmentation and inter-module linkage and implement individual components; determine project objectives by analyzing user needs; and determine the nature and sequence of the tasks that must be implemented in order to produce a solution.

Typical tasks include providing basic consultation and/or training for IT personnel and systems users; following agency test and validation procedures; maintaining technical currency in coding techniques; programming prototype applications as assigned; and developing, implementing, coding, testing, and documenting one or more significant program segments written in a general purpose programming language.

Incumbents' work potentially involves errors that disable or delay the project in question, causing inconvenience to others and additional costs to correct; are assigned projects that tend to be limited in scope and are responsible for successful operation of the project; and work directly affects users of the project and actions and decisions affect important, ongoing projects within an agency.

**IT Professional I:** Under general supervision, incumbents perform duties as continuing trainees. This is a supervisory level for the Computer Operations function.

**Computer Operations:** Under general supervision, incumbents supervise IT Technician Trainees, I's, II's, III's, and IV's. Some incumbents may be required to supervise IT Technician V's and/or VI's.

**Systems Administration, Network Administration, Database Administration, Applications Analysis and Development:** Incumbents receive training in the performance of many of the duties described in the series concept. Progression to the next level in the series may occur upon meeting minimum qualifications and with the approval of the appointing authority.

**IT Professional Trainee:** Under close supervision of a higher-level IT Professional, incumbents acquire the requisite knowledge, skills, and abilities and gain experience in a specialized information technology area such as systems administration, network administration, database administration, or applications analysis and development. Incumbents perform a variety of IT-related duties as trainees. Progression to the next level in the series may occur upon meeting minimum qualifications and with the approval of the appointing authority.

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## MINIMUM QUALIFICATIONS

### SPECIAL REQUIREMENTS:

- \* Pursuant to NRS 284.4066, some positions in this series have been identified as affecting public safety. Persons offered employment in these positions must submit to a pre-employment screening for controlled substances.
- \* Some positions require a pre-employment criminal history check and fingerprinting.
- \* Some positions are subject to call-out or call-back.

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### MINIMUM QUALIFICATIONS (cont'd)

#### SPECIAL REQUIREMENTS (cont'd)

- \* Some positions require specialized certification that will be identified at the time of recruitment.
- \* Some positions require statewide travel.
- \* Some positions require work on evenings, weekends, and/or holidays.

#### In addition, some positions in Computer Operations require:

- \* IT Professional III – One year of the required experience must have been in a supervisory capacity.

#### INFORMATIONAL NOTES:

- \* Applicants for positions in this series may have a combination of complementary education, experience, knowledge, skills, and abilities that qualify for the class level and specialty being recruited.

#### Additional Informational Notes for Information Security positions:

- \* International Information Systems Security Certification Consortium, Inc (ISC<sup>2</sup>) – Certified Information System Security Professional (CISSP) is equivalent to three years of experience.
- \* Information Systems Audit and Control Association (ISACA) – Certified Information Security Manager (CISM) is equivalent to two years of experience.
- \* Global Information Assurance Certification (GIAC) – Security Expert is equivalent to two years of experience.
- \* Other nationally recognized information security certifications may be substituted for up to one year of experience.
- \* Nevada Information Security Professional (NISP) or CISSP certification must be obtained within 12 months of appointment and maintained as a condition of continued employment.

### IT PROFESSIONAL IV

**EDUCATION AND EXPERIENCE:** Bachelor's degree from an accredited college or university with major course work in computer science, management information systems, or closely related field and five years of progressively responsible professional IT experience relevant to the duties of the position which may include systems administration, network administration, database administration, applications analysis and development, and/or information security, two years of which were at the advanced journey level or in a supervisory or project management capacity; **OR** bachelor's degree from an accredited college or university with major course work in computer science, management information systems, or closely related field and five years of progressively responsible professional IT experience which may include systems administration, network administration, database administration, applications analysis and development, and/or information security, relevant to the duties of the position, two years of which were at the journey level in information security; **OR** two years of relevant experience as an IT Professional III in Nevada State service; **OR** an equivalent combination of education and experience. (*See Special Requirements and Informational Notes*)



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## MINIMUM QUALIFICATIONS (cont'd)

### IT PROFESSIONAL IV (cont'd)

#### **Systems Administration:**

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Detailed knowledge of:** principles of designing test procedures; principles, practices, and procedures required to design, analyze, and maintain software; principles, tools, and techniques as applied to writing and modifying programs; systems programming languages and techniques. **Working knowledge of:** capacity planning techniques; performance monitoring principles and related software products; telecommunication technology and related systems software; various systems software products and their interrelationships; vendor procedures for applying maintenance and temporary fixes. **General knowledge of:** supervisory principles and techniques. **Ability to:** analyze and diagnose operational hardware and software problems occurring in a computer environment; anticipate and plan for future information system technologies; assign work to and coordinate and train subordinate personnel; develop and prioritize task lists and resolve problems; develop technical specifications for bid requests and analyze vendor responses; implement state wide, multi-departmental operating systems; provide high-level technical consultation and training. **Skill in:** developing specialized programs for other programmers; improving the performance of complex computer systems; *and all knowledge, skills, and abilities required at the lower levels in the same IT Professional specialization.*

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES (typically acquired on the job):

**Detailed knowledge of:** State regulations related to IT and purchasing. **Working knowledge of:** personnel administration. **Ability to:** train, supervise, and evaluate the performance of assigned personnel.

#### **Network Administration:**

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Detailed knowledge of:** the methodology for implementing distributed applications; network authentication; data storage networks; network security design and implementation; network communications hardware such as routers, switches, and firewalls; systems integration, hardware, and data communications; virtual private networks and virtual LANs; network performance trending and network utilization; data processing systems; network design and architecture. **Working knowledge of:** network file and application servers, project management, directory services integration, intrusion detection/prevention systems logs, data encryption methodologies. **General knowledge of:** supervisory practices. **Ability to:** configure and deploy firewalls, routers, and switches; present network design recommendations to management; implement network design changes; provide technical training, direction, and leadership; plan, organize, and direct projects; provide communications protocol analysis for large applications; design and configure virtual private networks; interpret authentication logs; *and all knowledge, skills, and abilities required at the lower levels in the same IT Professional specialization.*

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES (typically acquired on the job):

**Detailed knowledge of:** State regulations related to IT and purchasing. **Working knowledge of:** personnel administration. **Ability to:** train, supervise, and evaluate the performance of assigned personnel.

#### **Database Administration:**

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Detailed knowledge of:** database and operating system performance tuning and monitoring; database backup and recovery scenarios and methodologies; software installation, configuration and maintenance; structured query language. **Ability to:** analyze and recommend the purchase/lease of client server applications, database products, and development and integration tools; provide effective and responsive

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### MINIMUM QUALIFICATIONS (cont'd)

#### IT PROFESSIONAL IV (cont'd)

##### **Database Administration:** (cont'd)

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (cont'd)

customer service in a computing environment directly supporting business operations; design, code and debug stored procedures and functions; lead the architecture, design and implementation of new database applications; *and all knowledge, skills, and abilities required at the lower levels in the same IT Professional specialization.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):

**Detailed knowledge of:** State regulations related to IT and purchasing. **Working knowledge of:** personnel administration. **Ability to:** train, supervise, and evaluate the performance of assigned personnel.

##### **Applications Analysis and Development:**

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**Detailed knowledge of:** access methods and file structures; at least one formal systems design methodology; principles of designing test procedures; principles, practices and procedures required to develop, design and implement information system-based solutions in a wide range of problem domains; strengths and limitations of a number of general purpose programming languages (in software-oriented positions). **Working knowledge of:** project control techniques, including cost estimating and resource scheduling. **General knowledge of:** a network topology and protocol; computer platforms, capabilities and support software; supervisory principles and techniques; telecommunications principles and support software. **Ability to:** assign work to and coordinate and train subordinate personnel; extract logical commonalities among classes of problems; select appropriate data structures and algorithms to achieve efficient problem representation and resolution; translate data structures and algorithms. **Skill in:** problem solving, analysis and synthesis; *and all knowledge, skills and abilities required at the lower levels in the same IT Professional specialization.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):

**Detailed knowledge of:** State regulations related to IT and purchasing. **Working knowledge of:** personnel administration. **Ability to:** train, supervise, and evaluate the performance of assigned personnel.

##### **Information Security:**

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**Working knowledge of:** current principles, theories, practices and procedures related to information security management; five of the ten information security domains; general-purpose security controls; current information security trends and technologies; strategic planning and project management at the division/work unit level; policy development and implementation; methods and techniques used to safeguard against accidental or unauthorized modification, destruction or disclosure of data to meet security needs; interagency business practices and principles. **Ability to:** identify complex information security risks, vulnerabilities and problems; select the best course of mitigation actions for security issues; assess the security and/or vulnerability of information assets to assist in developing a risk assessment of multiple security domains; assess costs and present alternatives for the assigned area of responsibility; analyze data, solve problems and make appropriate decisions within five of the ten domains; design appropriate solutions to complex security problems; *and all knowledge, skills, and abilities required at the lower levels in the same IT Professional specialization.*

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### MINIMUM QUALIFICATIONS (cont'd)

#### IT PROFESSIONAL IV (cont'd)

##### **Information Security:** (cont'd)

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES (typically acquired on the job):

**Working knowledge of:** departmental regulations, policies, standards and procedures related to IT systems, services and security. **General knowledge of:** State personnel and purchasing regulations.

#### IT PROFESSIONAL III

EDUCATION AND EXPERIENCE: Bachelor's degree from an accredited college or university with major course work in computer science, management information systems, or closely related field and three years of progressively responsible professional IT experience relevant to the duties of the position which may include computer operations, systems administration, network administration, database administration, applications analysis and development, and/or information security, one year of which was at the journey level; **OR** one year of relevant experience as an IT Professional II in Nevada State service; **OR** an equivalent combination of education and experience. (*See Special Requirements and Informational Notes*)

##### **Computer Operations:**

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Detailed knowledge of:** basic elements of programming in order to generate all required reports and special projects as required of the data processing section; computer operating system including all functions, schedules, workflows, and processes; data communication networks; principles of operation, capabilities and limitations of a computer system and related environmental equipment in order to efficiently and effectively produce the final work product; supervisory principles and techniques.

**Working knowledge of:** diagnostic procedures as needed in verifying systems; principles of operation, capabilities and limitations of a computer system and related equipment in order to efficiently and effectively produce the final work product; the principles of operation, capabilities and limitations of a multi-programming computer system and related equipment. **General knowledge of:** computer programming documentation techniques as needed in setting up and verifying systems programs. **Ability to:** analyze and develop current and proposed computer operation procedures for efficient and effective operations; anticipate changes and new directions within the data processing environment; plan, organize and direct a twenty-four hour, seven-day-a-week shift operation of a computer system; understand and apply technical manuals, environmental requirements and physical planning; *and all knowledge, skills, and abilities required at the lower levels in the same IT Professional specialization.*

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES (typically acquired on the job):

**Detailed knowledge of:** State regulations related to IT, purchasing, and personnel administration; workflow within the agency.

##### **Systems Administration:**

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Detailed knowledge of:** Some positions require knowledge of specific departmental information systems.

**Working knowledge of:** principles of designing test procedures; principles, practices, and procedures required to design, analyze, and maintain software; principles, tools, and techniques as applied to writing and modifying programs; systems programming languages and techniques. **General knowledge of:** capacity planning techniques; performance monitoring principles and related software products; telecommunication technology and related systems software; various systems software products and their interrelationships; vendor procedures for applying maintenance and temporary fixes. **Ability to:** communicate effectively orally and in writing; evaluate and tailor information system hardware and/or

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### MINIMUM QUALIFICATIONS (cont'd)

#### IT PROFESSIONAL III (cont'd)

##### **Systems Administration:** (cont'd)

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (cont'd)

software to meet local requirements; implement auxiliary software and subsystems; maintain effective working relationships with others; provide mid-level technical consultation and training; recommend and implement system changes. **Skill in:** implementing changes to a variety of networking systems; managing large volumes of data on various storage media; *and all knowledge, skills, and abilities required at the lower levels in the same IT Professional specialization.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):

**Working knowledge of:** State purchasing procedures; the principles of training, coaching, and supervision if applicable to the position.

##### **Network Administration:**

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**Detailed knowledge of:** directory services; network operating systems; network problem troubleshooting; concepts, characteristics, and capabilities of network based applications; current and emerging trends in developing computer networking technology; principles and practices of data backup and recovery; the principles, practices, and techniques used to install, maintain, and support LANs and wide area networks (WANs); computer network communication protocols; the concepts, characteristics, and capabilities of computer operating systems. **Working knowledge of:** the methodology for implementing distributed applications; network authentication; data storage networks; network security design and implementation; network communications hardware such as routers, switches, and firewalls; systems integration and optimization; virtual private networks and virtual LANs. **Ability to:** recommend hardware to solve network issues; verify router configuration and optimize routes; perform cost/benefit analysis; present network design concepts to management and users; integrate servers into a geographically dispersed network; participate in vendor interaction and verify that requirements are met; verify efficient interconnectivity of distributed applications; verify network capacity and provide utilization statistics; configure and upgrade data storage networks; solve network problems; interpret technical manuals; *and all knowledge, skills, and abilities required at the lower levels in the same IT Professional specialization.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):

**Working knowledge of:** State purchasing procedures; the principles of training, coaching, and supervision if applicable to the position.

##### **Database Administration:**

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**Detailed knowledge of:** physical and logical database structure and design; database backup and recovery scenarios and methodologies; database security management and data integrity. **Working knowledge of:** computer and network operating systems, computer hardware, and communications systems; database and operating system performance tuning monitoring; business practices and procedures; customer service standards and procedures; business software, systems analysis, systems design, system development lifecycle, and information architecture to effectively design and create databases; structured query language. **Ability to:** coordinate system design, applications and software programming, and computer operations activities relative to the database environment; *and all knowledge, skills, and abilities required at the lower levels in the same IT Professional specialization.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):

**Working knowledge of:** State purchasing procedures; the principles of training, coaching, and supervision if applicable to the position.

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## MINIMUM QUALIFICATIONS (cont'd)

### IT PROFESSIONAL III (cont'd)

#### **Applications Analysis and Development:**

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Detailed knowledge of:** basic programming techniques such as table handling and on-line file updates; general purpose programming languages (in software-oriented positions); principles, tools and techniques as applied to writing, modifying and documenting programs; techniques of diagramming program flow.

**Working knowledge of:** access methods and file structures; at least one formal systems design methodology; principles of designing test procedures; principles, practices and procedures required to develop, design and implement information system-based solutions in a wide range of problem domains.

**General knowledge of:** project control techniques, including cost estimating and resource scheduling.

**Ability to:** utilize interactive programming techniques; logically analyze problems of considerable complexity; test and validate information systems; *and all knowledge, skills, and abilities required at the lower levels in the same IT Professional specialization.*

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES (typically acquired on the job):

**Working knowledge of:** State purchasing procedures; the principles of training, coaching, and supervision if applicable to the position.

#### **Information Security:**

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Working knowledge of:** three of the ten security domains; current principles, theories, practices and procedures of information security management. **General knowledge of:** general-purpose security controls; current information security trends and technologies. **Ability to:** develop plans to safeguard against accidental or unauthorized modification, destruction or disclosure of data to meet security needs; assess costs and present alternatives for the assigned area of responsibility; participate in long-term projects and strategic planning; organize resources and materials in order to meet project timelines; assess the security and/or vulnerability of information assets to assist in developing a risk assessment; analyze data, solve problems and make appropriate decisions within three of the ten domains; provide effective and responsive customer service; establish and maintain positive working relationships with others; develop and implement information security training materials and workshops. **Skill in:** technical writing, report preparation and oral communication.

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES (typically acquired on the job):

**Working knowledge of:** State and department regulations, policies, standards, and procedures; Nevada Revised Statutes pertaining to information systems, services and security. **General knowledge of:** State Personnel regulations and processes. **Ability to:** identify information security risks, vulnerabilities, and problems for an agency. **Skill in:** agency business principles, practices, and activities.

### IT PROFESSIONAL II

**EDUCATION AND EXPERIENCE:** Bachelor's degree from an accredited college or university with major course work in computer science, management information systems, or closely related field and two years of progressively responsible professional IT experience relevant to the duties of the position which may include computer operations, systems administration, network administration, database administration, and/or applications analysis and development; **OR** two years of experience as an IT Professional I in Nevada State service; **OR** four years of relevant technical experience as an IT Technician IV or above in Nevada State service; **OR** an equivalent combination of education and experience. (*See Special Requirements and Informational Notes*)

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## MINIMUM QUALIFICATIONS (cont'd)

### IT PROFESSIONAL II (cont'd)

#### **Computer Operations:**

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Working knowledge of:** basic elements of programming in order to generate all required reports and special projects as required of the data processing section; computer operating system including all functions, schedules, workflows, and processes; data communication networks; principles of operation, capabilities and limitations of a computer system and related environmental equipment in order to efficiently and effectively produce the final work product; supervisory principles and techniques. **General knowledge of:** diagnostic procedures as needed in verifying systems; principles of operation, capabilities and limitations of a computer system and related environmental equipment in order to efficiently and effectively produce the final work product; the principles of operation, capabilities and limitations of a multi-programming computer system and related equipment. **Ability to:** plan, organize and direct a shift or multi-shift operation of a computer system in order to facilitate the workflow; *and all knowledge, skills, and abilities required at the lower level in the same IT Professional specialization.*

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES (typically acquired on the job):

**Detailed knowledge of:** State regulations related to IT and purchasing; workflow within the agency. **Working knowledge of:** personnel administration. **Ability to:** train, supervise, and evaluate the performance of assigned personnel.

#### **Systems Administration:**

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Detailed knowledge of:** strengths and limitations of a number of general purpose programming languages. **Working knowledge of:** specific departmental information systems (select positions). **General knowledge of:** principles of designing test procedures; principles, practices, and procedures required to design, analyze, and maintain software; principles, tools, and techniques as applied to writing and modifying programs; systems programming languages and techniques. **Ability to:** make decisions and use independent judgment (independently choose appropriate action after reviewing alternatives); provide general technical consultation and training; recommend and implement systems change. **Skill in:** interviewing users to identify needs; problem solving, analysis and synthesis; solving information systems problems; some positions may require skill in the use of LAN management software, audio generating equipment, data concentrators, front-end processors, data scopes and recorders, tone modulation test sets, and voice frequency (VF) monitoring equipment; *and all knowledge, skills, and abilities required at the lower level in the same IT Professional specialization.*

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES (typically acquired on the job):

**Detailed knowledge of:** departmental policies and procedures related to systems administration.

#### **Network Administration:**

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Working knowledge of:** directory services; network operating systems; network security practices; network problem troubleshooting; the concepts, characteristics, and capabilities of network based applications; current and emerging trends in developing computer networking technology; the principles and practices of data backup and recovery; the principles, practices, and techniques used to install, maintain, and support LANs and WANs; the concepts, characteristics, and capabilities of computer operating systems. **General knowledge of:** methodology for implementing distributed applications; network authentication; data storage networks. **Ability to:** write performance and utilization reports; collect and analyze data; implement network changes or additions; communicate complex technical concepts and terminology to agency management and network users; implement and maintain directory

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## MINIMUM QUALIFICATIONS (cont'd)

### IT PROFESSIONAL II (cont'd)

#### **Network Administration:** (cont'd)

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (cont'd)

services; resolve issues quickly with minimal outside help; configure and deploy servers; configure user rights and permissions; monitor device utilization; interpret information security policies; install workstations; troubleshoot hardware and software; understand technical manuals; verify compliance with information security policies.

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):

**Detailed knowledge of:** departmental policies and procedures related to network administration.

#### **Database Administration:**

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**Working knowledge of:** physical and logical database structure and design; database backup and recovery scenarios and methodologies; database security management and data integrity. **General knowledge of:** database and operating system performance tuning monitoring; business practices and procedures; customer service standards and procedures; business software, systems analysis, systems design, system development lifecycle, and information architecture to effectively design and create databases; computer and network operating systems, computer hardware, and communications systems; structured query language. **Ability to:** work effectively on multiple projects with overlapping deadlines; communicate and work well with changing priorities and frequent interruptions. **Skill in:** code migration, database change management, and data management through the various stages of the development life cycle; technical writing and report preparation; *and all knowledge, skills, and abilities required at the lower level in the same IT Professional specialization.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):

**Detailed knowledge of:** departmental policies and procedures related to database administration.

#### **Applications Analysis and Development:**

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**Working knowledge of:** at least one general purpose programming language (in software-oriented positions); basic programming techniques such as table handling and on-line file updates; principles, practices, and procedures required to design and implement information systems-based solutions; principles, tools and techniques as applied to writing, modifying and documenting programs; techniques of diagramming program flow. **General knowledge of:** access methods and file structures; at least one formal systems design methodology; principles of designing test procedures; principles, practices and procedures required to develop, design and implement information system-based solutions in a wide range of problem domains. **Ability to:** decompose problems into constituent parts; interview users to identify needs; make decisions and use independent judgment (independently choose appropriate action after reviewing alternatives); test and validate systems; *and all knowledge, skills, and abilities required at the lower level in the same IT Professional specialization.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):

**Detailed knowledge of:** departmental policies and procedures related to applications analysis and development.

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## MINIMUM QUALIFICATIONS (cont'd)

### IT PROFESSIONAL I

**EDUCATION AND EXPERIENCE:** Bachelor's degree from an accredited college or university with major course work in computer science, management information systems, or closely related field and one year of IT experience relevant to the duties of the position which may include computer operations, systems administration, network administration, database administration, and/or applications analysis and development; **OR** one year of experience as an IT Professional Trainee in Nevada State service; **OR** three years of relevant technical experience as an IT Technician IV or above in Nevada State service; **OR** an equivalent combination of education and experience. (*See Special Requirements and Informational Notes*)

#### **Computer Operations:**

**ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**General knowledge of:** basic elements of programming in order to generate all required reports and special projects as required of the data processing section; computer operating system including all functions, schedules, workflows, and processes; data communication network; principles of operation, capabilities and limitations of a computer system and related environmental equipment in order to efficiently and effectively produce the final work product; supervisory principles and techniques. **Ability to:** analyze and develop current and proposed computer operation procedures for efficient and effective operations; communicate effectively orally and in writing; correctly identify, diagnose, and rectify problems related to computer operations; evaluate equipment utilization and output in order to provide management with recommendations concerning hardware/software purchases; maintain effective working relationships with others; make decisions and use independent judgment (independently choose appropriate action after reviewing alternatives); order and maintain supplies; organize and direct disk and tape libraries; understand and apply technical manuals; *and all knowledge, skills, and abilities required at the lower level.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):

**Detailed knowledge of:** workflow within the agency. **Working knowledge of:** State regulations related to IT, purchasing and personnel administration.

#### **Systems Administration:**

**ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**Working knowledge of:** strengths and limitations of a number of general purpose programming languages. **General knowledge of:** principles of designing test procedures; programming techniques; some positions require knowledge of specific departmental information systems. **Ability to:** communicate effectively orally and in writing; maintain effective working relationships with others. **Skill in:** problem solving, analysis and synthesis; *and all knowledge, skills, and abilities required at the lower level.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):

*(These are identical to the Entry Level Knowledge, Skills, and Abilities required for IT Professional II – Systems Administration.)*

#### **Network Administration:**

**ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**General knowledge of:** directory services; network operating systems; network security practices; network problem troubleshooting; the concepts, characteristics, and capabilities of network based applications; current and emerging trends in developing computer networking technology; the principles and practices of data backup and recovery; the principles, practices, and techniques used to install, maintain, and support LANs and WANs; the concepts, characteristics, and capabilities of computer operating systems. **Ability to:** communicate effectively orally and in writing; establish and maintain



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## MINIMUM QUALIFICATIONS (cont'd)

### IT PROFESSIONAL I (cont'd)

#### **Network Administration:** (cont'd)

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (cont'd)

effective working relationships with others; exercise judgment and creativity; investigate and analyze information and draw conclusions; learn and adapt to new technologies; logically analyze problems of limited complexity; maintain effective working relationships with others; *and all knowledge, skills, and abilities required at the lower level.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):  
(*These are identical to the Entry Level Knowledge, Skills, and Abilities required for IT Professional II – Network Administration.*)

#### **Database Administration:**

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**Working knowledge of:** programming languages and techniques; application development. **General knowledge of:** current database methods and concepts; systems analysis and design; database systems and applications. **Ability to:** read and interpret technical manuals and specification documents on hardware and software; establish and maintain effective working relationships with others; communicate effectively orally and in writing; learn and adapt to new technologies; exercise judgment and creativity; investigate and analyze information and draw conclusions. **Skill in:** analysis, problem solving and decision-making; organization and time management; one or more application programming languages and techniques; *and all knowledge, skills, and abilities required at the lower level.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):  
(*These are identical to the Entry Level Knowledge, Skills, and Abilities required for IT Professional II – Database Administration.*)

#### **Applications Analysis and Development:**

##### **ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES** (required at time of application):

**General knowledge of:** at least one general purpose programming language (in software-oriented positions); basic programming techniques such as table handling and on-line file updates; principles, practices, and procedures required to design and implement information systems-based solutions; principles, tools and techniques as applied to writing, modifying and documenting programs; techniques of diagramming program flow. **Ability to:** communicate effectively orally and in writing; logically analyze problems of limited complexity; maintain effective working relationships with others; *and all knowledge, skills, and abilities required at the lower level.*

**FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES** (typically acquired on the job):  
(*These are identical to the Entry Level Knowledge, Skills, and Abilities required for IT Professional II – Applications Analysis and Development.*)

### IT PROFESSIONAL TRAINEE

**EDUCATION AND EXPERIENCE:** Bachelor's degree from an accredited college or university with major course work in computer science, management information systems, or closely related field. (*See Special Requirements and Informational Notes*)

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### MINIMUM QUALIFICATIONS (cont'd)

#### IT PROFESSIONAL TRAINEE (cont'd)

ENTRY LEVEL KNOWLEDGE, SKILLS, AND ABILITIES (required at time of application):

**Working knowledge of:** theories, principles, and concepts related to IT; modern computer hardware and software. **General knowledge of:** sources of information and research techniques; problem-solving methods. **Ability to:** communicate effectively both orally and in writing; establish and maintain effective working relationships with others; analyze data and reach logical conclusions; learn to perform professional level duties in a specialized area of information technology; write grammatically correct business correspondence; read and understand technical information.

FULL PERFORMANCE KNOWLEDGE, SKILLS, AND ABILITIES (typically acquired on the job):

**Working knowledge of:** practices and procedures common to the IT area to which assigned; agency policies related to assigned activities.

This class specification is used for classification, recruitment, and examination purposes. It is not to be considered a substitute for work performance standards for positions assigned to this series.

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REVISED:	7/1/97LG	7/1/97LG	7/1/97LG	7/1/97LG	7/1/97LG
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